

up as it does by its thorough investigation of local conditions and the actual remains of the ancient buildings so many of the earlier translators' almost hopeless perplexities! One after another, the Procession Street of Merodach, the Sacred Way along which marched the annual solemnity of Babylon's tutelary god; E-MAGH, the temple of NIN-MAGH, "The Exalted Lady," several inscribed cylinders from which may be seen in the British Museum collection; the Gate of Nanâ-Ishtar, with its superb enamelled figures; the palace of Nabopolassar (Nabû-apla-uçur), which Nebuchadrezzar restored with great splendour; the location of E-SAG-ILA, the temple of Merodach, and chief sanctuary of Babylon; the world-famed walls, and various connected structures, were determined and in part exposed to view.

All this, though perhaps not exactly the kind of matter to stimulate the enthusiasm of one who reads merely to while away an idle hour, constitutes a highly important contribution towards an exact topography of Babylon, and to the right understanding of the inscriptions of the Neo-Babylonian period; while it enables classical students to bring to the test of ascertained facts the descriptions of Babylon which we find in Herodotus and subsequent Greek and Latin authors, extracts from whose pages are given in Koldewey's convenient appendix. It is to be hoped that current events in the East may prove no bar to the further prosecution of Dr. Koldewey's meritorious and, indeed, necessary enterprise—even if it happen by the fortune of war that the whole or part of the treasures recovered by his continued labours should find their way to London instead of Berlin.

It should be added that the author has been fortunate in his translator, the English of the book being generally accurate and readable—which is not always the case with translations from German originals.

C. J. BALL.

SCIENCE AND INVENTION.¹

(1) **M**R. EDELMAN'S book commences with descriptions of a number of scientific experiments, illustrated by small but clear diagrams. Some of these experiments will be familiar to all those who have taken an experimental course in chemistry and physics, but freshness is given by including simple instances of technical applications of scientific principles.

¹ (1) "Experiments. A Volume for All who are Interested in Progress." By P. E. Edelman. Pp. 256. (Minneapolis, U.S.A.: Philip E. Edelman, 1914.) Price 1.50 dollars.

(2) "Discoveries and Inventions of the Twentieth Century." By E. Cressy. Pp. xvi+398. (London: G. Routledge and Sons, Ltd., 1914.) Price 7s. 6d. net.

NO. 2376, VOL. 95]

Thus, sections are devoted to "thermit," the electrolytic cleaning of tarnished silver by contact with aluminium in a solution of soda and salt, the preparation of colloidal solutions of platinum and gold, etc. The following description of a method of soldering aluminium may prove useful (p. 47):—

Aluminium, 1 part; zinc, 4 parts. After the aluminium has been melted add the zinc, then a small quantity of fat. The mixture should be well stirred, after which it may be poured into stick moulds.

To apply, scrape the article bright at place to be soldered. Use a little Venetian turpentine as a soldering fluid. A thin shaving of the solder may then be placed around the joint and melted with a blow torch.

It is impossible to mention the very large number of technical and scientific principles which are described and illustrated; it must suffice to say that these range from the production of Pharaoh's serpents, through electric motors and

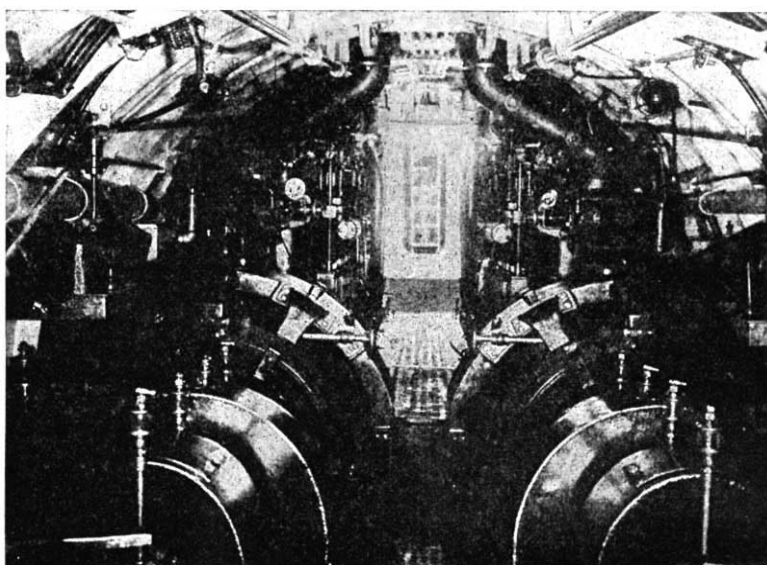


FIG. 1.—Engine room of submarine looking forward. From "Discoveries and Inventions of the Twentieth Century."

dynamos, to wireless telegraphy and X-rays. The last nine chapters are devoted to an analysis of the principles used in research and invention. The book is well got up, and forms interesting and instructive reading.

(2) Although the twentieth century is still young, Mr. Cressy has found nearly four hundred pages to be none too many in which to describe the progress of inventions made therein. The remarkable improvements which have been made in the details of most industries are clearly brought before the reader. The modern applications of water power, as exhibited in the water turbine and the Pelton wheel; the developments of the steam turbine; the Humphrey pump; improvements in gas, petrol, and oil engines, including the Diesel marine engine, and the "Gnome" engine for aeroplanes; these form a few of the developments described in the first few chapters. Electric lighting is next discussed, and some in-

stances in which electric heating is advisable are mentioned. Later, a brief but lucid account is given of the nature of steel, including the modern alloys of iron and manganese, chromium, nickel, and tungsten. A separate chapter is devoted to the electric furnace. An interesting and instructive chapter is devoted to the artificial production of cold, including liquefaction of gases and the methods used in cold storage. At the present time, when the advisability of increasing the productiveness of agricultural land is receiving attention, the chapters on "soil and crops" will be read with interest.

Railways, tramways, and motor-cars next receive consideration, and the wonderful developments of ship-building are ably dealt with. Great skill has been shown by the author in pointing out the scientific principles which have been utilised in each new technical advance. Thus, in connection with the speed of ships, Prof. Hele

admire the painstaking erudition displayed by the author. Books of this character are apt to take the form of undigested summaries of inventions, only partially understood. This is not the case with the book now under review. The author could not hope, and has not attempted, to give exhaustive descriptions of the multifarious technical inventions with which he deals; but these are always described in a stimulating manner, and great accuracy is displayed throughout. The letterpress is illustrated with 281 figures and a coloured frontispiece.

EDWIN EDSER.

THE GOVERNMENT AND CHEMICAL RESEARCH.

THE President and Council of the Royal Society and of the Chemical Society have recently had under consideration the state of chemical industry in this country as revealed by the effects of the war, and have prepared memorials to his Majesty's Government directing attention to the necessity for immediate action. On Thursday last a deputation was received by the President of the Board of Trade and the President of the Board of Education at the Board of Trade offices for the discussion of the questions raised in the two memorials. Mr. Runciman and Mr. Pease were accompanied by Dr. Addison, M.P., Sir H. Llewellyn Smith, Sir L. A. Selby-Bigge, Mr. Ogilvie, Dr. Heath, and Mr. Percy Ashley.

The deputation was introduced by Sir William Crookes, who explained the functions of the several societies represented, and it consisted of Prof. A. W. Crossley, Dr. H. J. H. Fenton, Dr. M. O. Forster, Prof. W. H. Perkin, Prof. W. J. Pope, Prof. A. Schuster, Prof. A. Smithells, Prof. J. F. Thorpe, and Mr. R. W. Harrison, representing the Royal Society; Dr. A. Scott, Prof. F. G. Donnan, Prof. P. F. Frankland, Prof. J. C. Philip, Sir W. A. Tilden, and Dr. S. Smiles, representing the Chemical Society; Mr. A. C. Chapman, President of the Society of Public Analysts, Dr. G. G. Henderson, President of the Society of Chemical Industry, and Prof. H. Jackson and Mr. E. W. Voelcker, representing the Institute of Chemistry. Sir H. E. Roscoe and Prof. R. Meldola were prevented from attending by ill-health.

Prof. W. H. Perkin, Sir W. A. Tilden, Prof. P. F. Frankland, Prof. W. J. Pope, and Dr. M. O. Forster spoke on behalf of the deputation. It was urged that the main causes of the comparatively backward state of many branches of chemical industry in this country are the general failure to realise that modern technical industry,

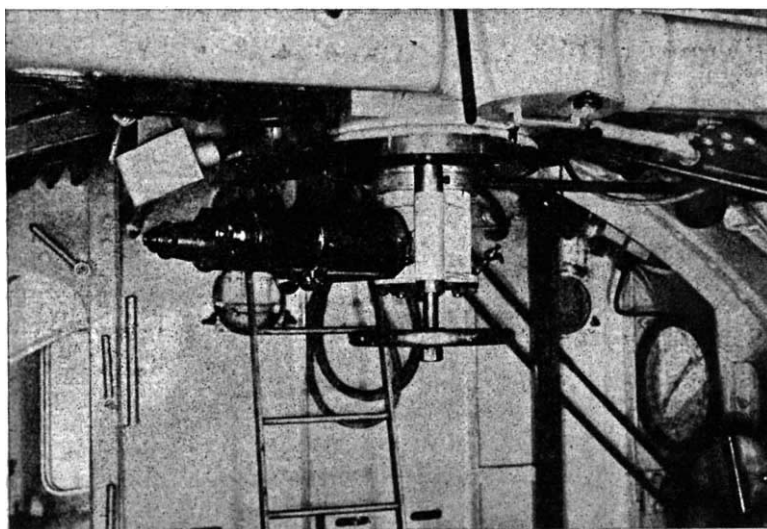


FIG. 2.—Telescope at lower end of periscope tube. From "Discoveries and Inventions of the Twentieth Century."

Shaw's experiments in fluid motion, and Froude's method of determining the power required to drive a full size ship from experiments on a small-scale model, are described and illustrated. Naturally enough, aerial and submarine navigation receive their due share of attention; the most important types of monoplanes, biplanes, dirigible balloons, and submarine ships are described, and an interesting section is devoted to the gyrostatic compass. Details of the construction and method of firing of the torpedo are also given. The illustrations showing the interior of a submarine (Figs. 1 and 2) will excite considerable interest.

In reviewing this book, which contains an immense amount of material of the highest interest, it has been found impossible to do more than indicate the aim and scope of the work. Points of scientific interest are mentioned on almost every page, and the reader cannot but

NO. 2376, VOL. 95]